

ORYSSUS IS PARASITIC.

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So far as can be determined, the larval habits of the family Oryssidae have never been published. Harrington (Trans. Roy. Soc., Canada, Sect. IV, p. 151, 1893) says that "It has been suggested that they are of a parasitic habit, and the actions of the insects when searching for a place to oviposit very much resemble those of species well known to be parasitic." Rohwer (Proc. U. S. Nat. Mus., Vol. 43, p. 156, 1912) refers to an observation by Dr. A. D. Hopkins which indicates parasitism. He collected a pupa in an old mine of a Cerambycid in the dead wood of a living Douglas spruce (*Pseudotsuga taxifolia*) at Port Angeles, Washington, on May 15, 1899. A male was reared from this and named *Oryssus hopkinsi* Rohwer.

During the past two years a number of observations have been made by the various men attached to the Pacific Slope Forest Insect Station which definitely prove that *Oryssus* is parasitic on several species of the genus *Buprestis* and probably also on other *Buprestidae*.

The first of these observations was made by the writer at Placerville, Calif., on March 21, 1914. A parasitic larva was found in a cell in the outer wood of an old scar on one side of the trunk of a healthy Douglas spruce near a young adult and a large larva of *Buprestis aurulenta* Linn. The parasitic larva was then supposed to be an *Ichneumonid* parasite of the *Buprestis*.

On September 17, 1915, Entomological Ranger J. D. Riggs collected at Bray, Calif., two larvae in an old aspen (*Populus tremuloides*) log. One was in the pupal cell with the fragments of a beetle (*Buprestis confluens* Say) and the other was attacking a larva of this same *Buprestis*. This latter specimen of parasitic larva pupated on March 9, 1916, and transformed to a female adult *Oryssus occidentalis* Cresson on March 29, 1916.

While collecting in some old weather beaten yellow pine (*Pinus ponderosa*) logs near Placerville, Calif., on November 2, 1915, Entomological Ranger F. B. Herbert and the writer found a number of naked larvae, which we took to be *Ichneumonid* larvae, in the pupal cells of *Buprestis laeviventris* with the remains of the larvae of that species. On March 17, 1916, three of these pupated. One of these transformed to an adult *Oryssus occidentalis* on April 6, one on April 8, and one was preserved as a specimen.

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One larva pupated on March 18 and transformed to an adult April 8, and another pupated on March 22, and transformed on April 15.

On April 4, 1916, another examination of these logs was made. Mr. Herbert found an *Oryssus* pupa in what appeared to be the pupal cell of the Buprestid *Chrysophana placida*. At the same time the writer found a large *Oryssus* pupa in the pupal cell of *Buprestis laeviventris*. This transformed to a large female on April 19.

At the last examination of the logs on May 27, Mr. Herbert "noticed an *Oryssus* female crawling over the same log from which we had obtained specimens of *Oryssus*, *Buprestis laeviventris*, *Buprestis aurulenta*, *Chrysophana placida*, and *Leptura laetifica*. She was examining the log very carefully, sweeping her antennae across the surface of the wood at every step. She systematically covered most of the log, going the length of it three different times and covering certain areas 6 or 8 different times. After thirty-five minutes she apparently found a spot to her liking, which she covered several times. She finally placed her body at an angle of 15 to 20 degrees with the surface of the wood, with the abdomen against the wood, and began boring with the ovipositor. After $4\frac{1}{2}$ minutes she pulled the ovipositor out and began examining the log again when she was captured. During the boring her body and antennae quivered all the while." The spot on the log where she had bored was marked and examined. The hole made by the ovipositor was followed for $\frac{3}{4}$ of an inch until lost in the boring dust of a *Buprestis* larval mine.

Besides the records which point to the parasitic nature of *Oryssus occidentalis* the following records have been made: by the writer—June 23 to July 7, 1906, four males and four females, at Summerdale, Calif., crawling on a weather beaten white fir (*Abies concolor*) log at an old mill; May 31, 1912, a female near Yreka, Calif., crawling over the trunk of a yellow pine (*Pinus ponderosa*) peeled during March, 1912, in the control work against the western pine beetle (*Dendroctonus brevicornis*); July 17, 1915, an adult male and female at Fallen Leaf, Calif., crawling up and down an old dead white fir (*Abies concolor*) stub; August 4, 1915, near Vade, Calif., a female crawling on the trunk of a solid, weather beaten, dead lodgepole pine (*Pinus contorta*), which was infested with *Buprestis aurulenta* larvae. By Entomological Ranger J. J. Sullivan—February 4, 1914, at Placerville, Calif., a larva from the outer wood of a dead digger pine (*Pinus sabiniana*) stump, which pupated on March 1 and transformed to an adult female on March 20; April 3, 1915, at Placerville, a pupa from the outer wood of a rotten sugar pine (*Pinus lambertiana*) stump which was a live female in the rearing vial on

June 8. By Entomological Ranger F. B. Herbert—July 7, 1915, a female flying in the forest at the Pyramid Ranger Station, Calif; July 17, 1915, at Fallen Leaf, Calif., a female crawling on a dead white fir (*Abies concolor*); and May 5, 1916, at Placerville, Calif., a female on the stump of a yellow pine (*Pinus ponderosa*) treated in February, 1915, in the control work against the western pine beetle (*Dendroctonus brevicomis*).

Probably the most interesting point connected with the life history of *Oryssus* is what becomes of the long external ovipositor of the pupa upon transformation to the adult. The actual transformation was not observed so this is a point to be determined by future study. Another point to be determined is the exact length of the life cycle. The larvae of the genus *Buprestis* upon which the *Oryssus* is parasitic live for several years in the wood of the host plant. So far the *Oryssus* larvae have been found only with the large larvae of the *Buprestis*. Whether they are internal feeders when small in the small larvae of the *Buprestis* or whether they attack only the large larvae are points for future determination.

The specimens upon which these observations were made will be turned over to Mr. S. A. Rohwer for taxonomic study. As the larvae appear quite different from the typical horntail (*Siricoidea*) larva and the habits are quite different, the systematic position of *Oryssus* in the classification of the Hymenoptera may be changed.

IDIOGASTRA, A NEW SUBORDER OF HYMENOPTERA WITH NOTES ON THE IMMATURE STAGES OF ORYSSUS.

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The summary by Rohwer of the literature dealing with the habits of the oryssoids published in 1912 (Proc. U. S. Nat. Mus., vol. 43, p. 141), shows the conflicting suppositions explaining the habits of the members of this interesting group. The importance of the discovery of the larva of *Oryssus occidentalis* and its habits by Mr. H. E. Burke are very manifest and have called forth the remarks on the position of the group offered below.

While the authors do not believe that the biology or any characters especially developed by unusual habits should be made the primary reason for systematic groups we do believe that biology offers a good index to affinities and gives valuable suggestions as to